



Calhoun: The NPS Institutional Archive

Reports and Technical Reports

All Technical Reports Collection

2009-09-30

Managing the Services Supply Chain in the Department of Defense: Empirical Study of the Current Management Practices in the Army



Calhoun is a project of the Dudley Knox Library at NPS, furthering the precepts and goals of open government and government transparency. All information contained herein has been approved for release by the NPS Public Affairs Officer.

**Dudley Knox Library / Naval Postgraduate School
411 Dyer Road / 1 University Circle
Monterey, California USA 93943**

<http://www.nps.edu/library>

NPS-CM-09-136



ACQUISITION RESEARCH SPONSORED REPORT SERIES

**Managing the Services Supply Chain in the Department of
Defense: Empirical Study of the Current Management
Practices in the Army**

21 September 2009

by

Dr. Aruna U. Apte, Assistant Professor

Dr. Uday Apte, Professor, and

Dr. Rene G. Rendon, Associate Professor

Graduate School of Business & Public Policy

Naval Postgraduate School

Approved for public release, distribution is unlimited.

Prepared for: Naval Postgraduate School, Monterey, California 93943



ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

The research presented in this report was supported by the Acquisition Chair of the Graduate School of Business & Public Policy at the Naval Postgraduate School.

To request Defense Acquisition Research or to become a research sponsor, please contact:

NPS Acquisition Research Program
Attn: James B. Greene, RADM, USN, (Ret)
Acquisition Chair
Graduate School of Business and Public Policy
Naval Postgraduate School
555 Dyer Road, Room 332
Monterey, CA 93943-5103
Tel: (831) 656-2092
Fax: (831) 656-2253
e-mail: jbgreene@nps.edu

Copies of the Acquisition Sponsored Research Reports may be printed from our website www.acquisitionresearch.org



ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

Abstract

This paper presents the results of the fourth research project in our ongoing research on the management of services acquisition in the Department of Defense. In this empirical study, we developed and used a Web-based survey to collect data on the acquisition strategy, procurement methods, and contract types used at Army installations. Specifically, we studied the current management practices in such areas as lifecycle approach, project management, organization/management structure, and training provided to services acquisition personnel.

We found that the majority of the services contracts awarded and administered conformed to our expectation. For example, most service contracts, except in the case of medical services, are competitively bid, fixed-priced awards with a minimal use of any type of contract incentives. The survey respondents also indicated that the number of authorized staff positions in the Army for services acquisition was inadequate and furthermore that the existing billets were inadequately filled. In this paper, we analyze the implications and impact of different approaches on the effectiveness of the contract management process and make recommendations for improving the management of services acquisition in the Army.

Keywords: Service Supply Chain, Services Acquisition, Service Lifecycle, Contract Management, Project Management, Program Management



THIS PAGE INTENTIONALLY LEFT BLANK



About the Authors

Dr. Aruna Apte is an Assistant Professor in the Department of Operations and Logistics Management, Graduate School of Business and Public Policy, at the Naval Postgraduate School, Monterey, California. She received her PhD in Operations Research from the School of Engineering at the Southern Methodist University in Dallas, Texas. Her earlier education includes a Master's in Mathematics and credits towards a PhD in Mathematics from Temple University, Philadelphia, Pennsylvania. She has taught in the Cox School of Business, School of Engineering and the Department of Mathematics at Southern Methodist University. She has over twenty years of experience in teaching operations management, operations research, and mathematics courses at the undergraduate and graduate levels in the resident and remote programs.

Apte has successfully completed various research projects involving applications of mathematical models and optimization techniques. Her research interests are in the areas of developing mathematical models and algorithms for complex, real-world operational problems, especially in the area of humanitarian logistics and critical infrastructure networks, using techniques of combinatorial optimization, network programming, and mixed-integer programming based on heuristic search methods. It is also important to her that her research is directly applicable to practical problems and has significant value-adding potential. Her research articles have been published in prestigious journals including *Naval Research Logistics*, *Production and Operations Management*, and *Interfaces*. She has published several articles in the *Acquisition Research Sponsored Report Series*, *GSBPP*, *NPS*. She also has a patent pending for "SONET Ring Designer Tool," created when she worked as a consultant for MCI.

Aruna Apte
Assistant Professor, Operations and Logistics Management
Graduate School of Business and Public Policy
Naval Postgraduate School
Monterey, CA 93943-5197
Tel: (831) 656-7583
E-mail: auapte@nps.edu

Dr. Uday Apte is a Professor of Operations Management at the Graduate School of Business and Public Policy, Naval Postgraduate School, Monterey, CA. Before joining NPS, Uday taught at the Wharton School, University of Pennsylvania, Philadelphia, and at the Cox School of Business, Southern Methodist University, Dallas. He is experienced in teaching a range of operations management and management science courses in the Executive and Full-time MBA as well as the business undergraduate programs. His earlier education includes B. Tech. in Chemical Engineering from the Indian Institute of Technology, Bombay, India, an MBA from the Asian Institute of Management, Manila, Philippines, and a PhD in



Decision Sciences from The Wharton School, University of Pennsylvania, Philadelphia.

Apte is currently serving as the Vice President for Colleges, Production and Operations Management Society (POMS). In the past, he has served as the founder and President of the POMS College of Service Operations, as a board member of POMS, and as guest editor of *Production and Operations Management* journal. Prior to his career in academia, Apte worked for over ten years in managing operations and information systems in the financial services and utility industries. Since then, he has consulted with several major US corporations and international organizations. His recent consulting engagements have focused on process improvement using Lean Six Sigma and development of operations strategy.

Areas of Dr. Apte's research interests include managing service operations, globalization of information-intensive services, supply chain management, and technology management. He has published over 40 research articles, five of which have won awards from professional societies. His research articles have been published in prestigious journals including *Management Science*, *Interfaces*, *Production and Operations Management*, *Journal of Operations Management*, *Decision Sciences*, *IIE Transactions*, *Interfaces*, and *MIS Quarterly*. He has co-authored two books, *Manufacturing Automation* and *Managing in the Information Economy*.

Uday Apte, PhD
Professor
Graduate School of Business and Public Policy
Naval Postgraduate School
Monterey, CA 93943-5197
Tel: (831) 656-3598
E-mail: umapte@nps.edu

Dr. Rene G. Rendon is a nationally recognized authority in the areas of supply management, contract management, and project management. He is currently on the faculty of the United States Naval Postgraduate School, where he teaches in the MBA and Master of Science programs. Prior to his appointment at the Naval Postgraduate School, he served for more than 22 years as an acquisition and contracting officer in the United States Air Force, retiring at the rank of lieutenant colonel. His Air Force career included assignments as a warranted contracting officer for the Peacekeeper ICBM, Maverick Missile, C-20 (Gulfstream IV), and the F-22 Raptor. He was also a contracting squadron commander for an Air Force pilot training base and the director of contracting for the Air Force's Space-based Infrared satellite system and the Evolved Expendable Launch Vehicle rocket program.

Rendon has taught contract management courses for the UCLA Government Contracts program; he was also a senior faculty member for the Keller Graduate School of Management, where he taught MBA courses in project management and



contract management. He is a graduate of the US Air Force Squadron Officer School, Air Command and Staff College, Air War College, and the Department of Defense Systems Management College. Rendon is Level III certified in both Program Management and Contracting under the *Defense Acquisition Workforce Improvement Act (DAWIA)* program. He is also a Certified Professional Contracts Manager (CPCM) with the National Contract Management Association (NCMA), a Certified Purchasing Manager (C.P.M.) with the Institute for Supply Management (ISM), and a certified Project Management Professional (PMP) with the Project Management Institute (PMI). He has received the prestigious Fellow Award from NCMA, and he was recognized with the United States Air Force Outstanding Officer in Contracting Award. He has also received the NCMA National Education Award and the NCMA Outstanding Fellow Award. Dr. Rendon is a member of the ISM Certification Committee as well as on the Editorial Review Board for the ISM *Inside Supply Management* magazine. He is a member of the NCMA Board of Advisors as well as associate editor for its *Journal of Contract Management*. Dr. Rendon's publications include *Government Contracting Basics* (2007), *U. S. Military Program Management: Lessons Learned & Best Practices* (2007), and *Contract Management Organizational Assessment Tools* (2005). He has also published scholarly articles in the *Contract Management* magazine, the *Journal of Contract Management*, the *Program Manager* magazine, the *Project Management Journal*, and the *PM Network* magazine. He is a frequent speaker at universities and professional conferences and provides consulting to both government and industry.

Rene G. Rendon, D.B.A
Associate Professor
Graduate School of Business and Public Policy
Naval Postgraduate School
Monterey, CA 93945-5197
Tel: (831) 656-3464
E-mail: rgrendon@nps.edu



THIS PAGE INTENTIONALLY LEFT BLANK





ACQUISITION RESEARCH SPONSORED REPORT SERIES

**Managing the Services Supply Chain in the Department of
Defense: Empirical Study of the Current Management
Practices in the Army**

21 September 2009

by

Dr. Aruna U. Apte, Assistant Professor

Dr. Uday Apte, Professor, and

Dr. Rene G. Rendon, Associate Professor

Graduate School of Business & Public Policy

Naval Postgraduate School

Disclaimer: The views represented in this report are those of the author and do not reflect the official policy position of the Navy, the Department of Defense, or the Federal Government.



THIS PAGE INTENTIONALLY LEFT BLANK



ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

Table of Contents

1.0	Introduction	1
2.0	Research Objectives	5
2.1	Development and Review of Survey Instrument.....	5
3.0	Survey Data and Observations	9
3.1	Contract Characteristics	10
3.2	Acquisition Management Methods	12
3.3	Program Management Issues	16
4.0	Research Findings, Analysis, and Recommendations	21
4.1	Research Findings and Analysis	21
4.2	Recommendations.....	26
	List of References.....	29



THIS PAGE INTENTIONALLY LEFT BLANK



ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

1.0 Introduction

Services acquisition in the US Department of Defense (DoD) has continued to increase in scope and dollars in the past decade. In fact, even considering the high value of weapon systems and large military items purchased in recent years, the DoD has spent more on services than on supplies, equipment and goods (Camm, Blickstein & Venzor, 2004). For example, the Department of Defense's obligations on contracts have more than doubled between fiscal years 2001 and 2008 to over \$387 billion, with over \$200 billion spent just for services (GAO, 2009). The acquired services presently cover a very broad set of service activities including professional, administrative, and management support; construction, repair, and maintenance of facilities and equipment; information technology; research and development; and medical care.

As the DoD's services acquisition continues to increase in scope and dollars, the DoD must give greater attention to proper acquisition planning, adequate requirements definition, sufficient price evaluation, and proper contractor oversight (GAO, 2002). Recently, the Director of Defense Procurement and Acquisition Policy (DPAP) identified the inappropriate use of services contracts in the DoD (Director, DPAP, 2007, March 2) and is planning to take action to improve contracting for services throughout the Department (Director, DPAP, 2006, August 16). In many ways, the issues affecting services acquisition are similar to those affecting the acquisition of physical supplies and weapon systems. However, the unique characteristics of services, combined with the increasing importance of services acquisition, offer a unique and significant opportunity for research into the management of the service supply chain in the Department of Defense.

We have addressed the need for research in the area of services acquisition by undertaking a series of research projects. Thus far, we have completed four research projects. The first research project was exploratory in nature wherein we tried to understand the major challenges and opportunities in the service supply chain in the



DoD (Apte, Ferrer, Lewis & Rendon, 2006). As a part of this first research study, we conducted in-depth case studies on acquisition of services in three different organizations: Presidio of Monterey, Travis AFB and the Naval Support Detachment Monterey (NSDM).

The lack of a well-developed program management infrastructure for the acquisition of services was a critical research finding that warranted further study. Therefore, our second research project was geared towards studying the program management infrastructure in the service supply chain in the DoD. In this research, too, we conducted two additional in-depth case studies of innovative project management approaches both at the Air Education and Training Command (AETC) and at Air Combat Command (ACC). Based on these case studies, we developed a conceptual model of a service lifecycle that can be used to analyze and design the DoD's services acquisition process. In our project report (Apte & Rendon, 2007), we discussed the program management approach, identified basic project management concepts, described how these concepts are being used in the acquisition of defense weapon systems, and recommended how they can be adapted in the acquisition of services in the DoD.

The third research project consisted of an empirical study of the current management practices in services acquisition in the Navy and the Air Force. In this empirical study, we developed and used a Web-based survey to collect data on the acquisition strategy, procurement methods, and contract types used at Air Force and Navy installations (Apte, Apte & Rendon, 2009). Specifically, we studied the management practices in such areas as lifecycle approach, project management, organization/ management structure, and training provided to services acquisition personnel.

This paper presents the results of our fourth research project wherein we extended the empirical study of current management practices to services acquisition in the Army. In carrying out this research, the researchers were assisted by MBA students



Charles Rau and Peter Stammersky (see Rau & Stammersky, 2009). The paper is organized in four sections including the current introductory section. In the next section, we review the objectives of the current research, describe the survey instrument used in the study, and identify the specific services studies in this research. The survey data, the results of data analysis, and some salient observations are provided in the third section. The findings and conclusions of the study and our recommendations for improving services acquisition are presented in the fourth section.



THIS PAGE INTENTIONALLY LEFT BLANK



ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

2.0 Research Objectives

The objective of this fourth research project is to develop a more comprehensive understanding of how services acquisition is managed at a wide range of military bases throughout the Department of Defense. This research is focused on answering the following research questions:

1. What types of services are typically contracted for Army installations and what is the annual expenditure for acquisition of these services?
2. What type of acquisition strategies, procurement methods, and contracts are being used in services acquisition?
3. How is the service acquisition process managed? Specifically, what management concepts—such as lifecycle, program management or project management approach—are used?
4. What training is given to contract and project/program management staff?

2.1 Development and Review of Survey Instrument

The methodology for this research involves the application of a survey instrument recently developed for this specific purpose. The MBA student team of Jeff Compton and Brian Meinshausen, under the guidance of Professors Apte, Apte, and Rendon, developed the survey instrument as part of their MBA research project (Compton & Meinshausen, 2007). This was a Web-based survey instrument developed using the survey software “Survey Monkey.” The developed survey was pilot tested for its validity and was used in the third research project to collect additional empirical data regarding the current state of services acquisition management in the Navy and the Air Force at the installation level.

The services acquisition research survey begins with questions focusing on specific demographic data for each military department, major command, region, and military installation. The survey then asks specific questions related to the approach, method, and procedures used in the acquisition of services for specific categories of



services. The specific categories of services targeted in this research are listed in Table 1 below. These categories were selected because collectively they represent over 67% of total spending for all the services, excluding construction, purchased within the Army in FY 2008 (FPDS, 2009).

Table 1. Service Categories

Service Category	Classification Code
Professional, administrative, and management support	R
Maintenance and repair of equipment	J
Data processing and telecommunications	D
Medical	Q
Maintenance and Repair of Real Property	Z
Utilities and housekeeping	S
Transportation	V

The survey instrument includes core questions related to the methods and procedures used in the acquisition of services for these five categories of services. These core questions focus on the following areas:

Contract Characteristics. The purpose of this category of questions is to gain insight into the dominant procurement method and contract type used in the acquisition of services at the installation level. The contract characteristics examined in this section are degree of competition (competitively bid or sole-source), contract type (fixed-price or cost-type), and type of contract incentive (incentive-fee, award-fee, or award-term).

Acquisition Management Methods. The purpose of this broad category of questions is to gain insight into the types of management methods and approaches used in the acquisition of individual services at each phase of the contract management process. For each of the contract management phases, the survey asks whether the phase was conducted at a regional, installation, or some other organizational level. This core question category also focused on whether a project-team approach was



typically used in the acquisition of the respective service category at the installation level. The questions explore the position of the services acquisition project-team leader, such as a program/project manager or contracting officer. The questions also explore information on the owner, generator, and approving authority of the requirement for a specific service being acquired.

Other Program Management Issues. This last category of core questions is focused on the use of a lifecycle approach, length of assignments for services acquisition management personnel staff, use of market research techniques, level of staffing in services acquisition management, and level of training of services acquisition management personnel. These questions use a Likert-type scale to measure the level of agreement or disagreement amongst the respondents' statements.

Finally, the survey solicits feedback and any general comments the respondents may want to share regarding the topic of services acquisition. This survey instrument allowed the researchers to collect data that was subsequently analyzed to answer the research questions.



THIS PAGE INTENTIONALLY LEFT BLANK



ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

3.0 Survey Data and Observations

In this section, we present a summary of the survey data we gathered as well as our observations about the data. Specifically, we discuss the data concerning various contract characteristics, acquisition management methods, project team approach, and other program management issues related to seven individual service categories. In subsequent sections we then present our conclusions and recommendations based on our study.

The participants for this survey were selected based on the organization they worked for and their position within the organization. The goal was to gather data from every organization within the Army Contracting Command that directly manages or oversees the contracting of services. The researchers sought to have senior contracting officers within the selected organizations complete the survey. The purpose was to ensure that the person completing the survey had a comprehensive view and understanding of how their organization managed service contracts.

The only exception to the criteria above was the exclusion of the Expeditionary Contracting Command. Given the uniqueness of contracting that takes place during contingency operations, the researchers believed that the data provided by the Expeditionary Contracting Command would not accurately reflect the contracting practices during peacetime operations. The researchers also did not want to create additional work for these personnel because of the environment and existing workload that Expeditionary Contracting Command was already experiencing.

A standardized, 81-question survey entitled *DoD Military Installation Services Acquisition Survey—Army* was deployed to 81 contracting offices. The survey was distributed across 8 major contracting centers throughout the Army, including 40 Army installations. We received a total of 61 responses to the survey, with a survey response rate of 75%. Out of the 61 respondents, 33 were from MICC; 12 were from Tank and Automotive Command (TACOM); 7 were from Research and Development Command



(RDECOM); 5 were from National Capital Region (NCR); and 4 were from Communications and Electronics Command (CECOM); there were no respondents from Joint Munitions and Lethality (JM&L), Aviation and Missile Command (AMCOM) and Rock Island Arsenal.

3.1 Contract Characteristics

To understand contract characteristics and uncover salient trends, the survey requested that respondents provide annual data for the past six years—from FY03 to FY08. The data on contract characteristics prevalent in various service categories are shown in Table 2 below.

Table 2. Contract Characteristics



	Degree of Competition			Contract Type			Contract Incentive			
	Compe- titive	Sole Source	N/A	Fixed Price	Cost	N/A	Incentive Fee	Award Fee	Award Term	N/A
Professional, Administrative, and Management Support										
FY03	70%	9%	20%	59%	19%	22%	0%	19%	2%	80%
FY04	73%	9%	17%	64%	16%	20%	2%	16%	2%	81%
FY05	75%	8%	17%	64%	16%	20%	3%	16%	2%	80%
FY06	83%	8%	9%	73%	16%	11%	5%	17%	3%	75%
FY07	88%	6%	6%	77%	16%	8%	3%	20%	3%	73%
FY08	88%	8%	5%	78%	14%	8%	3%	19%	3%	75%
Maintenance and Repair of Equipment										
FY03	65%	15%	21%	60%	16%	24%	0%	10%	2%	89%
FY04	63%	18%	19%	65%	13%	23%	0%	7%	2%	92%
FY05	63%	16%	21%	65%	13%	23%	0%	7%	2%	92%
FY06	68%	18%	15%	68%	15%	18%	2%	7%	2%	90%
FY07	68%	19%	13%	71%	15%	15%	2%	7%	2%	90%
FY08	68%	19%	13%	69%	16%	15%	2%	7%	2%	90%
Data Processing and Telecommunications										
FY03	64%	8%	28%	64%	5%	31%	0%	3%	2%	95%
FY04	64%	8%	28%	64%	5%	31%	0%	2%	2%	97%
FY05	66%	7%	28%	62%	7%	31%	0%	2%	2%	97%
FY06	67%	8%	25%	64%	8%	28%	0%	2%	3%	95%
FY07	71%	8%	21%	69%	7%	25%	0%	2%	3%	95%
FY08	74%	7%	20%	71%	7%	23%	0%	2%	3%	95%
Medical										
FY03	15%	2%	84%	15%	0%	85%	0%	0%	0%	100%
FY04	13%	2%	85%	13%	0%	87%	0%	0%	0%	100%
FY05	13%	2%	85%	13%	0%	87%	0%	0%	0%	100%
FY06	15%	2%	84%	15%	0%	85%	0%	0%	0%	100%
FY07	15%	0%	85%	16%	0%	84%	0%	0%	0%	100%
FY08	13%	0%	87%	15%	0%	85%	0%	0%	0%	100%
Maintenance and Repair of Real Property										
FY03	66%	3%	31%	61%	8%	31%	0%	5%	2%	93%
FY04	66%	5%	30%	62%	8%	30%	0%	5%	2%	93%
FY05	66%	5%	30%	62%	8%	30%	0%	5%	2%	93%
FY06	66%	5%	30%	62%	10%	28%	0%	5%	2%	93%
FY07	67%	7%	26%	66%	10%	25%	0%	5%	2%	93%
FY08	71%	7%	23%	66%	12%	23%	2%	7%	2%	90%
Utilities and Housekeeping										
FY03	44%	18%	38%	59%	2%	39%	0%	2%	2%	97%
FY04	44%	18%	38%	59%	2%	39%	0%	2%	2%	97%
FY05	44%	21%	34%	61%	2%	38%	0%	2%	2%	97%
FY06	44%	20%	36%	61%	2%	38%	0%	2%	2%	97%
FY07	51%	16%	33%	62%	2%	36%	0%	2%	2%	97%
FY08	49%	16%	34%	61%	2%	38%	0%	2%	2%	97%
Transportation and Travel										
FY03	41%	5%	54%	46%	0%	54%	0%	0%	2%	98%
FY04	43%	3%	54%	44%	0%	56%	0%	0%	0%	100%
FY05	43%	5%	52%	46%	0%	54%	0%	0%	0%	100%
FY06	44%	3%	52%	48%	0%	52%	0%	0%	0%	100%
FY07	46%	3%	51%	48%	0%	52%	0%	0%	0%	100%
FY08	46%	3%	51%	49%	0%	51%	0%	0%	0%	100%

The following are some observations about the contract characteristics of seven different services. In the interest of brevity, we refer only to the data for FY08.

- Professional, Administrative, & Management Support Services: Based on Table 2, we see that a competitive approach is used 88% of the time while sole-source is only used 8% of the time. Additionally, fixed-price-type contracts are used 78% of the time while cost-type contracts are only used 14% of the time. Finally, contract incentives of some type were used only about 25% of the time, with award fee being the most often used contract incentive.
- Maintenance and Repair of Equipment: We note that a competitive approach is used 68% of the time while sole-source is used 19% of the time. Additionally, fixed-price-type contracts are used 69% of the time



while cost-type contracts are used 16% of the time consistently. Contract incentives of any kind are rarely used in any capacity, only about 11% of the time.

- Data Processing and Telecommunications: Based on Table 2, we see that a competitive approach is used 74% of the time while sole-source is only used 7% of the time. Additionally, fixed-price-type contracts are used 71% of the time while cost-type contracts are only used 7% of the time consistently. Contract incentives are rarely used, only 5% of the time.
- Medical: We see that a competitive approach is used only 13% of the time while sole-source is not used at all. Additionally, fixed-price-type contracts are used 15% of the time while cost-type contracts are not used at all. Contract incentives are rarely used, only 5% of the time. The high percentage of not applicable responses for this service category can possibly be linked to the fact that medical services are not procured through the Army contracting centers but rather through procurement officers working for the US Army Medical Department (AMEDD). This is a service category that requires separate, further research into how medical services are acquired. This recommendation is included in the final chapter of our report.
- Maintenance and Repair of Real Property: Based on Table 2, we see that a competitive approach is used 71% of the time while sole-source is only used 7% of the time. Additionally, fixed-price-type contracts are used 66% of the time while cost-type contracts are only used 12% of the time consistently. Contract incentives of any kind are rarely used in any capacity, only about 11% of the time.
- Utilities and Housekeeping: We note that a competitive approach is used 49% of the time while sole-source is only used 26% of the time. Additionally, fixed-price-type contracts are used 61% of the time while cost-type contracts are only used 2% of the time consistently. Contract incentives are rarely used, only 4% of the time.
- Transportation and Travel: Finally, Table 2 suggests that a competitive approach is predominantly used—46% of the time—while sole-source is used only about 3% of the time. Additionally, fixed-price-type contracts are used 49% of the time while cost-type contracts were not used at all. Contract incentives were never used.

3.2 Acquisition Management Methods

The survey respondents were asked to state the organizational level at which the specific services were acquired—in other words, at what level were the procurement



process for the services conducted? The results are shown in Table 3 below. The various DoD components acquire services either at the major command (MAJCOM) level, regional level or installation level. Below are the results of the survey. The responses indicate that during all acquisition phases, the services acquisition is overwhelmingly managed (in about 70% cases) at the installation level. The medical and transportation/travel services were managed at the installation level in about 20% and 50% of cases respectively. Managing services acquisition at installation level can lead to better oversight and customer response, but, on the other hand, it can also lead to variation in the level of oversight provided at different installations. We also note a high level of N/A responses for medical and transportation/travel service. Does that mean that these services are not being managed at the Army level? As indicated earlier, a further study is needed to address this issue.



Table 3. Organization Level Used in Acquisitions Phases

Service/Acquisition Phase	Organization Level		
	Regional	Installation	N/A
Professional, Administrative, and Management Support			
Acquisition Planning	19%	75%	6%
Solicitation	22%	72%	6%
Source Selection	17%	69%	14%
Contract Administration	17%	78%	5%
Maintenance and Repair of Equipment			
Acquisition Planning	11%	79%	10%
Solicitation	13%	79%	8%
Source Selection	13%	74%	13%
Contract Administration	13%	77%	10%
Data Processing and Telecommunication			
Acquisition Planning	20%	62%	18%
Solicitation	21%	62%	16%
Source Selection	20%	59%	21%
Contract Administration	16%	67%	16%
Medical			
Acquisition Planning	0%	21%	79%
Solicitation	0%	21%	79%
Source Selection	0%	16%	84%
Contract Administration	0%	21%	79%
Maintenance and Repair of Real Property			
Acquisition Planning	3%	77%	20%
Solicitation	5%	75%	20%
Source Selection	5%	72%	23%
Contract Administration	3%	77%	20%
Utilities and Housekeeping			
Acquisition Planning	10%	61%	30%
Solicitation	7%	62%	31%
Source Selection	7%	56%	38%
Contract Administration	5%	67%	28%
Transportation and Travel			
Acquisition Planning	5%	48%	48%
Solicitation	5%	48%	48%
Source Selection	3%	44%	53%
Contract Administration	2%	51%	48%

The survey results about the use of the project team approach (see Table 4) show that this approach was used in a majority of the acquisitions for all services categories (in about 62% of the cases).



Table 4. Use of Project Team Approach

Service Category	Total No. of Organizations	Organizations Using Project Team Approach					Organizations Not Using Project Team Approach				
		SubTotal	Who leads acquisition?		Who owns requirements?		SubTotal	Who leads acquisition?		Who owns requirements?	
			CO	Other (PM, QAE)	CO	Customer (PM, QAE)		CO	Other (PM, QAE)	CO	Customer (PM, QAE)
Professional, Administrative, and Management Support	63	45	34	11	14	31	18	14	4	6	12
Maintenance and Repair of Equipment	62	41	28	13	13	28	22	14	8	15	7
Data Processing and Telecommunication	62	41	27	14	12	29	21	12	9	3	18
Medical	61	14	8	6	3	11	47	7	40	3	44
Maintenance and Repair of Real Property	61	37	24	13	8	29	24	12	12	3	21
Utilities and Housekeeping	61	37	25	12	8	29	24	7	17	1	23
Transportation and Travel	61	30	19	11	8	22	31	8	23	1	30

Regardless of whether the respondents answered yes or no to the utilization of a project-team approach question, the respondents were asked who leads the acquisition of the services and who owns the requirements or approves changes to the requirements. As shown above in Table 4, the responses to these questions were relatively similar. In a majority of the cases, a contracting officer leads the acquisition process. This clearly indicates that program managers are usually not part of the acquisition process of procuring services at the installation level. Additionally, customers are usually responsible for owning and changing the requirements for services at the installation level.

3.3 Program Management Issues

In addition to the topics mentioned above, our research objective was also to investigate issues related to the personnel involved in and responsible for various aspects of services acquisition management. The issues include use of lifecycle approach as well as the length, level, and qualifications of personnel in service acquisition management. We also explored the extent of market research used by decision-makers in awarding services contracts. Exhibit 1 below describes the responses from the survey regarding the scope and ability of personnel responsible for service contracts. As shown in Exhibit 1, the contracting officer writes and awards contracts for services in virtually all (about 97%) of the cases. However, when asked who was responsible for surveillance at the installation, the results showed little consistency among the respondents with none of the choices (such as Contracting Officer (CO), Quality Assurance Evaluator (QAE), Program/Project Manager (PM) or customer) being selected more than 30% of the time. In addition, results for training show that about 57% of the respondents had received Defense Acquisition Workforce Improvement Act (DAWIA) certified training while about 20% of staff members had Quality Assurance Phase I or Phase II training. Regarding the length of service in their position, 87% of QAE/CORs were in their current position for over a year while the remaining 13% were more than six months but less than one year in their current position.



Exhibit 1. Scope and Ability of Personnel Responsible for Service Contracts

Who writes and awards contracts for services at your installation?

- Contracting Officer: 96.7%
- General Services Administration: 0.0%
- DCMA: 0.0%
- Other: 3.3%

Who, at your installation, is responsible for contractor surveillance?

- Contracting Officer: 13.1%
- Quality Assurance Evaluator (QAE): 21.3%
- Program Manager: 3.3%
- DCMA: 3.3%
- Customer (unit which requested required service): 29.5%
- Other: 29.5%

What type of training does the majority of services acquisition contract and project/program management staff typically receive? (Percentages do not add to 100 since some staff members receive multiple types of training.)

- Basic/Generic Project Management Training: 23.0%
- Quality Assurance Phase I Training: 13.1%
- Quality Assurance Phase II Training: 6.6%
- Defense Acquisition Workforce Improvement Act Certified Training: 57.4%
- Other: 32.8%

On average, how long do Contracting Officer Representatives (CORs)/ Quality Assurance Evaluators (QAEs) serve in their position?

- Less than 6 months: 0.0%
- 6 to 12 months: 13.1%
- 12 to 24 months: 37.7%
- 24 to 36 months: 9.8%
- Over 36 months: 39.3%



The survey asked Likert-scale-based questions related to the use of a lifecycle approach for routine and non-routine services acquisition, the extent of the use of market research, billets for service acquisition management, and responsibilities of the QAE. The survey data is presented in Table 5 below. Here, the answers are displayed in three categories: percent of respondents that disagreed, were neutral, or agreed. It should be noted that the categories of disagreed and agreed shown here also include, respectively, those who disagreed or agreed strongly. Table 5 shows that for routine services, only 41% agreed that lifecycle approach was a dominant strategy while for non-routine services, only 21% agreed that this was so. The opinion was almost evenly split about the CORs/QAEs being assigned for a short term at the installation. About 44% disagreed and 38% agreed with the statement. Finally, a significant majority of respondents indicated that the number of authorized staffing positions for services acquisition was inadequate and that, furthermore, the existing billets were inadequately filled. Equally importantly, it was observed that adequate oversight was not provided in monitoring contractor performance.



Table 5. Lifecycle Approach, Market Research, Billets and Responsibility

Lifecycle Approach	Disagree %	Neutral %	Agree %	N/A %
For routine services, this was the dominant strategy	34	18	41	7
For non-routine services, this was the dominant strategy	43	25	21	11
Contracting Officer Representatives (CORs)/Quality Assurance Evaluators (QAEs) at the installation serve in short-term assignments (18 months or less)	44	16	38	2
Market Research				
Market Research was conducted for the acquisition of services	15	2	82	2
Service Acquisition Billets				
There are adequate number of staff positions	74	10	13	3
These positions are adequately filled	66	13	16	5
These staff members are adequately trained	38	20	39	3
These staff members are adequately qualified	26	23	46	5
Responsibility of Staff Members				
Persons identifying requirement also write Statement of Work (SOW)/Statement of Objective (SOO) document	8	7	84	2
Quality Assurance Evaluators (QAE) receive prior formal/documented training	20	8	67	5
Quality Assurance Evaluators (QAE) submit written requests of performance and quality of work to Contracting Officer (CO)	38	10	48	5
Proper level of oversight is afforded to monitor contractor performance	57	20	23	0



THIS PAGE INTENTIONALLY LEFT BLANK



ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

4.0 Research Findings, Analysis, and Recommendations

This survey-based research provided a first look at empirical data related to the acquisition of services within the Army. The 81-question, Web-based survey had 61 responses with a 75% response rate. It provided real-world data on the characteristics of services contracts (degree of competition, contract/incentive type), various management approaches used (organizational level and project-team approach), and other program management issues (use of project lifecycle, length of acquisition personnel service, extent of market research, level of staffing, and training of staffing). A summary of our research findings, analysis, and conclusions are given below. This is followed by our recommendations.

4.1 Research Findings and Analysis

The cumulative results of our research on contract characteristics are displayed in Table 6. The data shows that the Army is using competitively-bid, fixed-priced contracts a majority of the time and that the frequency of these types of contracts has continually increased over the past six years. The results also show that contract incentives (incentive fee or award fee/term) are rarely utilized.

Table 6. Contract Characteristics Summary

	Degree of Competition			Contract Type			Contract Incentive			
	Competitive	Sole Source	N/A	Fixed	Cost	N/A	Incentive Fee	Award Fee	Award Term	N/A
FY03	58%	10%	32%	58%	8%	34%	0%	6%	2%	92%
FY04	59%	10%	31%	60%	7%	33%	0%	5%	1%	93%
FY05	59%	10%	30%	60%	7%	33%	1%	5%	1%	93%
FY06	62%	10%	28%	63%	8%	29%	1%	5%	2%	92%
FY07	65%	10%	25%	65%	8%	27%	1%	6%	2%	91%
FY08	66%	10%	24%	66%	8%	26%	1%	6%	2%	91%

*Medical services are not included in the table above.



The cumulative results of the research on a contracting organization level are displayed in Table 7. The data shows that the majority of the work throughout each acquisition phase was conducted at the installation level. These research findings provide additional insight into the effectiveness of the Army's services contract management. The relation of where the contracts are managed to where the services are actually performed may have an impact on the effectiveness of the contract management process, specifically relating to contractor oversight, ensuring compliance with contract requirements, and management of contract changes. Performing the contracting activities at the level where the services are performed gives the contracting officer and acquisition team (quality assurance evaluator, technical manager, financial manager, customer representative) a better understanding of the customers' needs and, therefore, allows them to provide more efficient and effective procurement support.

Table 7. Contracting Organization Level Summary

Acquisition Phase	Organization Level		
	Regional	Installation	N/A
Acquisition Planning	11%	67%	22%
Solicitation	12%	66%	22%
Source Selection	11%	62%	27%
Contract Administration	9%	70%	21%

The cumulative results of the research on the utilization of a project team approach are displayed in Table 8. The data shows that a project team approach was used 62% of the time. However, regardless of whether a project team approach was used, 61% of the respondents said that the contracting officer leads the team. Best practices in contract management reflect the use of project teams—specifically cross-functional teams—in the management of service procurement projects. These survey results reflect the precarious situations in which contracting officers find themselves as they manage the services procurement process. Not only are they responsible for managing the contractual aspects of the project but also for leading the acquisition project team. Most of the acquisition team members are not even part of the contracting



organization, nor do they work for the contracting officer. This may be problematic for the success of the services contract management effort. In addition, this situation, in which the contracting officer must lead a coordinated effort (involving quality, technical, financial, and customer personnel) in procuring critical services without the use of a project team, may catalyze some of the problems in managing services contracts that were identified by the GAO.

Table 8. Project Team Approach Summary

No. of Organizations	Organizations Using Project Team Approach				
	SubTotal	Who leads acquisition?		Who owns requirements?	
		Contracting Officer	Other (PM, QAE)	Contracting Officer	Customer (PM, QAE)
61	38	26	12	10	28

No. of Organizations	Organizations Not Using Project Team Approach				
	SubTotal	Who leads acquisition?		Who owns requirements?	
		Contracting Officer	Other (PM, QAE)	Contracting Officer	Customer (PM, QAE)
61	23	11	12	5	18

The table also shows that the customer owns the requirement 75% of the time regardless of whether or not a project team approach was used. In this research, the requirement is the specific service that is being procured—for example, operations research services (a specific professional, administrative, or management service) for a DoD agency. It is important to note that the contract management process and, more specifically, the authorities and responsibilities of the contracting officer do not include requirements management activities (such as determining the requirement, modifying the requirement, assessing the effectiveness of the requirement). These activities belong to the requirements owner—usually the organization responsible for the function or service being procured. For example, an Army public works organization would own and manage the grounds maintenance and custodial services being acquired by the



contracting organization for that specific installation. It is interesting to note that although program management (PM) or quality assurance evaluator (QAE) personnel owned the requirement in these services contracts, we still see contracting officers leading the acquisition effort 61% of the time. These situations—in which contracting officers are leading the acquisition teams although the requirements are owned by program personnel—may prove problematic to the effectiveness of the services acquisition. This situation may result in the blurring of (or at least a conflict in) the roles and responsibilities of authorities in the acquisition of services and the management of service requirements.

To answer the first research questions—what types of services are typically contracted for at Army installations and what is the annual expenditure for these services—we used the FPDS database to analyze how much the Army spends annually on all of the various service categories. This database was used to pull up the most recent data, which was the FY 2008 data. Table 9 shows that the Army spent over \$40 billion on the seven service categories listed. This represents over 67% of the dollars the Army spent on all services—not including construction costs—in FY 2008.

Table 9. Army Expenditures by PSC for FY 2008
(FPDS, 2009)

PSC Category (Description)	FY08\$M
R - Professional, admin, & mngt support	\$23,914
Z- Maintenance & repair of real property	\$4,631
J - Maintenance & repair of equipment	\$3,994
D- Data processing and telecom	\$3,116
S - Utilities & housekeeping	\$3,071
Q - Medical	\$896
V - Transportation	\$446

To answer the second research question—what type of acquisition strategies, procurement methods, and contracts are being used to acquire services—we analyzed responses from the survey questions that pertained to the dominant contract



characteristics and the dominant services acquisition management methods. The results show that the acquisition management phases (acquisition planning, solicitation, source selection, and contract administration) are conducted at the installation level over 60% of the time. The data also shows that the majority of contracts are competitively bid, fixed priced, and rarely include incentives. This holds true for all service categories except for medical. Most respondents did not have experience contracting for medical services, which lead to an overwhelming number of not applicable responses.

To answer the third research question—how are these service contracts managed—we analyzed the questions regarding acquisition services management and services acquisition leadership and staffing. The data shows that a lifecycle approach is used more often for the acquisition of routine services than it is for the acquisition of non-routine services. Lifecycle approach is used approximately 40% of the time for the acquisition of routine services versus only 21% of the time when acquiring non-routine services. The use of a lifecycle approach should be a concern for ensuring proper project management of non-routine services contract acquisition. Since the services being acquired are of a non-routine nature, one would expect higher levels of uncertainty—and, thus, higher levels of project risk—in the acquisition process for these services. One method for reducing risk is through the use of a project lifecycle with project phases, gates, and decision-points for monitoring and controlling the progression of the services acquisition process. Without the use of a project lifecycle, the services acquisition project may be vulnerable to excessive risk in terms of meeting cost, schedule, and performance objectives of the project.

In addition, the respondents overwhelmingly disagreed that their organization had sufficient acquisition positions and also disagreed that those positions were adequately filled. This data supports the GAO reports that as the acquisition of services increases on an annual basis, the acquisition workforce is not adequately manned to meet this growing demand.



To answer the fourth research question—what type of organization/management structures are used to manage contracted services—we analyzed the questions regarding services acquisition management methods and services acquisition leadership. The data also shows that 62% of the respondents' organizations utilize a project team approach; however, 68% of the respondents said that the contracting officer leads the team. In addition to leading the acquisition team, the contracting officer writes and awards the contract. While the contracting officer often leads the acquisition team, the data shows that the customers generate the requirement through writing the statement of work (SOW) approximately 83% of the time.

To answer the final research question—what training does contract and project/program management staff receive—we examined the survey questions concerning services acquisition management methods and services acquisition leadership. The data from these questions indicate that services acquisition members are inadequately trained. Only 39 respondents agreed that the acquisition workforce was adequately trained while just 45% of the respondents agreed that the workforce was adequately qualified. Although a large percentage of the respondents did not agree that the workforce was adequately qualified, the results show that contracting personnel are receiving training of some sort. There were numerous comments provided for the question regarding the type of training received. These comments included a range of answers from “none, learn by doing” to “whatever is offered on-line.” Additionally, QAEs are receiving formal, documented training 67% of the time, although they are only submitting required written reports on contractor performance 47% of the time.

4.2 Recommendations

To improve the management of services acquisition, the first recommendation is to increase the effectiveness and availability of training to ensure a qualified acquisition workforce. Based on the results from the research, respondents indicated that only 39% agreed that the acquisition workforce was adequately trained. In addition, only 45% of respondents agreed that acquisition staff members were adequately qualified.



Respondents also provided numerous negative comments regarding the poor quality and the lack of training. The recommended training should focus on all phases of the contract management process and related Federal Acquisition Regulation (FAR) policy. Additionally, training on areas related to working in cross-functional teams and using project lifecycles should be provided to all acquisition workforce in ACC. Finally, and more importantly, if ACC contracting officers will continue to act as de-facto project managers by leading the acquisition teams, then they should receive training on project management concepts, project control techniques, and project leadership.

Another recommendation to improve the overall management of services acquisition is to increase the size of the acquisition workforce, reversing the downsizing trend that began in the 1990s. The results of this research show that the number of CORs/QAEs also needs to be increased. Respondents agreed that proper oversight was occurring just 23% of the time. Increasing the size of the workforce will allow for better oversight and help ensure that contractor performance is properly monitored.

Another recommendation is to maintain the positive trend of increasing the number of competitively-bid, fixed-price contracts as depicted in Table 2. These types of contracts promote competition, which ensures the Government gets the right services at the best value. Fixed-price contracts shift the risk of cost overruns away from the Government and onto the contractor. This also serves to incentivize the contractor to complete tasks within budget.

Given the total amount of money spent and the scope of services acquisition in the Department of Defense, the opportunity for conducting research in this important area is limitless. In the spirit of identifying some specific projects for future research, one area that stands out is contracting for medical services. During the course of this research, we discovered that medical services are procured by a medical procurement officer and not a member of the Army Contracting Center. Further research should include who procures these services, how are they procured, and how this compares to the service categories procured by the Army.



We also recommend that the survey instrument be improved (see Rau & Stammers, 2009) and the survey be sent to units currently deployed to the CENTCOM area of responsibility. By collecting this data, comparisons can be made between contracting practices of deployed and non-deployed units. The survey should also be utilized by other DoD agencies such as the Marine Corps, the Special Operations Command (SOCOM), and the Transportation Command (TRANSCOM), all of which contract for services.



ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

List of References

- Apte, A., Apte, U., & Rendon, R. (2009). *Managing the service supply chain in the Department of Defense: An empirical study of current management practices* (Technical Report NPS-GSBPP-09-009). Monterey, CA: Acquisition Research Program, Naval Postgraduate School.
- Apte, U., Ferrer, G., Lewis, I., & Rendon, R. (2006). *Managing the service supply chain in the Department of Defense: Opportunities and challenges* (Technical Report NPS-AM-06-032). Monterey, CA: Acquisition Research Program, Naval Postgraduate School.
- Apte, U., & Rendon, R. (2007). *Managing the service supply chain in the Department of Defense: Implications for the program management infrastructure* (Technical Report NPS-PM-07-126). Monterey, CA: Acquisition Research Program, Naval Postgraduate School.
- Camm, F., Blickstein, I., & Venzor, J. (2004). *Recent large service acquisitions in the Department of Defense*. Santa Monica, CA: RAND National Defense Research Institute.
- Compton, J.A., & Meinshausen, B.A. (2007). *The Department of Defense's management of services acquisition: An empirical analysis* (Master's Thesis). Monterey, CA: Naval Postgraduate School.
- Director, Defense Procurement and Acquisition Policy (DPAP). (2006, August 16). *Government Accountability Office high risk area of contract management*. Memorandum. Washington, DC: OUSD (AT&L).
- Director, Defense Procurement and Acquisition Policy (DPAP). (2007, March 2). *Contracts for services*. Memorandum. Washington, DC: OUSD (AT&L).
- Federal Procurement Data System (FPDS). (2009) Retrieved February 12, 2009, from <https://www.fpds.gov/>.
- GAO. (2001, November). *Contract management: Improving services acquisition* (GAO-02-179T). Washington, DC: Author.
- GAO. (2002, January). *Best practices: Taking a strategic approach could improve DOD's acquisition of services* (GAO-02-230). Washington, DC: Author.
- GAO. (2005, March). *Contract management: Opportunities to improve surveillance on Department of Defense service contracts* (GAO-05-274). Washington, DC: Author.



GAO. (2005, June). *Defense infrastructure: Issues need to be addressed in managing and funding base operations and facilities support* (GAO-05-556). Washington, DC: Author.

GAO. (2009, February). *Defense Management: Actions needed to overcome long-standing challenges with weapon systems acquisition and service contract management* (GAO-09-362T). Washington, DC: Author.

Kerzner, H. (2006). *Project management: A systems approach to planning, scheduling and controlling*. Hoboken, NJ: John Wiley & Sons.

OMB. (2003, May 29). *Performance of commercial activities* (OMB Circular A-76). Washington, DC: Author.

Rau, C. A. & Stammersky, P. J. (2009). *Management and Oversight of Services Acquisition within the United States Army*. (Master's Thesis). Monterey, CA: Naval Postgraduate School.



ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

2003 - 2009 Sponsored Research Topics

Acquisition Management

- Acquiring Combat Capability via Public-Private Partnerships (PPPs)
- BCA: Contractor vs. Organic Growth
- Defense Industry Consolidation
- EU-US Defense Industrial Relationships
- Knowledge Value Added (KVA) + Real Options (RO) Applied to Shipyard Planning Processes
- Managing the Services Supply Chain
- MOSA Contracting Implications
- Portfolio Optimization via KVA + RO
- Private Military Sector
- Software Requirements for OA
- Spiral Development
- Strategy for Defense Acquisition Research
- The Software, Hardware Asset Reuse Enterprise (SHARE) repository

Contract Management

- Commodity Sourcing Strategies
- Contracting Government Procurement Functions
- Contractors in 21st-century Combat Zone
- Joint Contingency Contracting
- Model for Optimizing Contingency Contracting, Planning and Execution
- Navy Contract Writing Guide
- Past Performance in Source Selection
- Strategic Contingency Contracting
- Transforming DoD Contract Closeout
- USAF Energy Savings Performance Contracts
- USAF IT Commodity Council
- USMC Contingency Contracting



Financial Management

- Acquisitions via Leasing: MPS case
- Budget Scoring
- Budgeting for Capabilities-based Planning
- Capital Budgeting for the DoD
- Energy Saving Contracts/DoD Mobile Assets
- Financing DoD Budget via PPPs
- Lessons from Private Sector Capital Budgeting for DoD Acquisition Budgeting Reform
- PPPs and Government Financing
- ROI of Information Warfare Systems
- Special Termination Liability in MDAPs
- Strategic Sourcing
- Transaction Cost Economics (TCE) to Improve Cost Estimates

Human Resources

- Indefinite Reenlistment
- Individual Augmentation
- Learning Management Systems
- Moral Conduct Waivers and First-term Attrition
- Retention
- The Navy's Selective Reenlistment Bonus (SRB) Management System
- Tuition Assistance

Logistics Management

- Analysis of LAV Depot Maintenance
- Army LOG MOD
- ASDS Product Support Analysis
- Cold-chain Logistics
- Contractors Supporting Military Operations
- Diffusion/Variability on Vendor Performance Evaluation
- Evolutionary Acquisition
- Lean Six Sigma to Reduce Costs and Improve Readiness



ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

- Naval Aviation Maintenance and Process Improvement (2)
- Optimizing CIWS Lifecycle Support (LCS)
- Outsourcing the Pearl Harbor MK-48 Intermediate Maintenance Activity
- Pallet Management System
- PBL (4)
- Privatization-NOSL/NAWCI
- RFID (6)
- Risk Analysis for Performance-based Logistics
- R-TOC AEGIS Microwave Power Tubes
- Sense-and-Respond Logistics Network
- Strategic Sourcing

Program Management

- Building Collaborative Capacity
- Business Process Reengineering (BPR) for LCS Mission Module Acquisition
- Collaborative IT Tools Leveraging Competence
- Contractor vs. Organic Support
- Knowledge, Responsibilities and Decision Rights in MDAPs
- KVA Applied to AEGIS and SSDS
- Managing the Service Supply Chain
- Measuring Uncertainty in Earned Value
- Organizational Modeling and Simulation
- Public-Private Partnership
- Terminating Your Own Program
- Utilizing Collaborative and Three-dimensional Imaging Technology

A complete listing and electronic copies of published research are available on our website: www.acquisitionresearch.org



ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

THIS PAGE INTENTIONALLY LEFT BLANK



ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL



ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL
555 DYER ROAD, INGERSOLL HALL
MONTEREY, CALIFORNIA 93943

www.acquisitionresearch.org